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IS 8748 (1978): Forged/rolled CTC segments [MTD 16: Alloy Steels and Forgings]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 8748 - 1978

Indian Standard
SPECIFICATION FOR
FORGED/ROLLED CTC SEGMENTS

UDC 669.14.018.3 41 663.952.7.031 CTC



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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

July 1978

AMENDMENT NO. 1 JUNE 1988
TO
IS:8748-1978 SPECIFICATION FOR FORGED/ROLLED
CTC SEGMENTS

(Page 4, *clause 3.3*) - Add the following new clause after 3.3:

'3.4 Forged/rolled CTC segments shall be free from cracks and other harmful internal and surface defects.'

(SMDC 21)

Reprography Unit, BIS, New Delhi, India

Indian Standard

SPECIFICATION FOR FORGED/ROLLED CTC SEGMENTS

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(Continued on page 2)

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Indian Standard

SPECIFICATION FOR FORGED/ROLLED CTC SEGMENTS

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 13 March 1978, after the draft finalized by the Steel Forgings Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 CTC segments are used in CTC machines for the manufacture of CTC teas. The product has acquired its name from the manufacturing process, namely, crush, tear and curl.

0.3 This standard has been formulated to guide the manufacturers of CTC machines and the estate managers in the use of quality segments. Such rationalization in quality of CTC segments would eliminate the possibility of contamination of the CTC teas so produced, and would also retain the liquoring quality in the teas.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard prescribes the requirements for forged/rolled CTC segments.

2. TERMINOLOGY

2.0 For the purpose of this standard the following definitions shall apply.

2.1 Segments — A forged or rolled product, made out of a specified material (*see 3*) and machined subsequently to requisite size.

*Rules for rounding off numerical values (*revised*).

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2.2 Nominal Size — Nominal size of the segments includes outside diameter (OD), inside diameter (ID) and height (H) in machined condition in the same order, that is OD $\times$ ID $\times$ H.

3. MATERIAL

3.1 The segments shall be manufactured either from non-magnetic austenitic type stainless steel or from magnetic martensitic type of stainless steel. The chemical composition shall conform to any of the grades shown in Table 1.

TABLE 1 CHEMICAL COMPOSITION OF STAINLESS STEEL

CONSTITUENT (1)	REQUIREMENT FOR		
	X10Cr17Ni7*	X04Cr18Ni10*	X12Cr13†
	(2) Percent	(3) Percent	(4) Percent
Carbon	0.15, <i>Max</i>	0.08, <i>Max</i>	0.09-0.15
Silicon	1.0, <i>Max</i>	1.0, <i>Max</i>	1.0, <i>Max</i>
Manganese	2.0, <i>Max</i>	2.0, <i>Max</i>	1.0, <i>Max</i>
Nickel	6.0-8.0	8.0-12.0	1.0, <i>Max</i>
Chromium	16.0-18.0	17.0-20.0	11.5-14.0
Sulphur	0.030, <i>Max</i>	0.030, <i>Max</i>	0.030, <i>Max</i>
Phosphorus	0.045, <i>Max</i>	0.045, <i>Max</i>	0.040, <i>Max</i>

*See IS : 1762 (Part I)-1974 Code for designation of steels : Part I Based on letter symbols (*first revision*).

3.1.1 The chemical analysis shall be carried out in accordance with IS : 228* and its relevant parts.

3.2 The mechanical properties of the steels shall conform to the requirements given in Table 2.

3.3 For detailed chemical composition, mechanical property requirements and heat treatment of above steels, reference may be made to IS : 1570 (Part V)-1972†.

4. MACHINING

4.0 Machining of the segments shall be carried out in the sequence given in 4.1 to 4.3.

*Methods of chemical analysis of steels (*second revision*). (Issued in various parts).

†Schedules for wrought steels for general engineering purposes : Part V Stainless and heat-resisting steels (*first revision*).

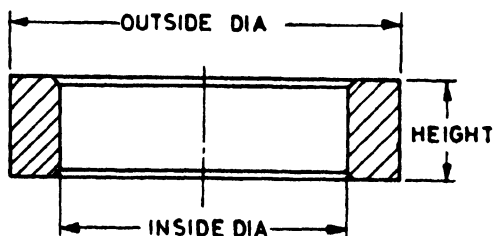
TABLE 2 MECHANICAL PROPERTIES OF STAINLESS STEEL

(Clause 3.2)

CHARACTERISTIC	REQUIREMENT FOR		
	X10Cr17Ni7*	X04Cr18Ni10*	X12Cr13*
(1)	(2)	(3)	(4)
Tensile strength, N/mm ²	590 to 780	490 to 690	590 to 780
0.2 percent proof stress, N/mm ² , Min	220	200	410
Percentage elongation, Min, on gauge length $5.65\sqrt{A}$	40	40	16
Hardness, BHN	212, Max	192, Max	201 to 255
Condition of supply	Softened	Softened	Hardened and tempered

*See IS : 1762 (Part I)-1974 Code for designation of steels: Part I Based on letter symbols (first revision).

4.1 Turning — Segments shall be turned to blanks with finished size (see Fig. 1).

**FIG. 1 BLANK TURNED TO FINISH DIMENSIONS**

4.2 Chasing — The blanks shall then be chased to form parallel grooves to suit the manufacture of CTC teas required (see Fig. 2).

4.3 Milling — Thereafter, the blanks shall be grooved by helical milling with different depth ratios to suit individual requirements of the estate managers in the manufacture of required grade of teas (see Fig. 3).

5. TOLERANCES

5.1 The segments shall be machined to tolerances agreed between the manufacturer and the actual user.

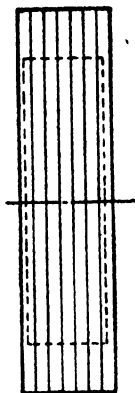


FIG. 2 CHASING

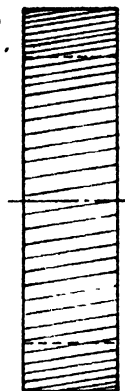


FIG. 3 MILLING

6. SAMPLING

6.1 Test samples shall be provided from the bars or billets from which CTC segments are made. They shall be forged to the ruling section of the forgings, and shall be heat-treated similarly and simultaneously with the forging they represent.

6.2 One test per heat number and per ruling section shall be carried out. Re-testing, if any, shall be carried out in accordance with 12 of IS : 3479-1966*.

6.3 General conditions for selection and preparation of samples and test pieces shall be in accordance with IS : 3711-1966†. The axis of the test samples for tensile test taken from bars and billets shall conform to those given in Fig. 4.

7. PHYSICAL TESTS

7.1 Tensile Test — Tensile test shall be carried out in accordance with IS : 1608-1972‡. Test pieces shall be machined lengthwise from each test sample.

7.2 Hardness Test — Hardness test shall be carried out in accordance with IS : 1500-1968§.

*General requirements for steel drop, upset and press forgings.

†Method for selection and preparation of samples and test pieces for mechanical tests for wrought steel.

‡Method for tensile testing of steel products (first revision).

§Method for Brinell hardness test for steel (first revision).

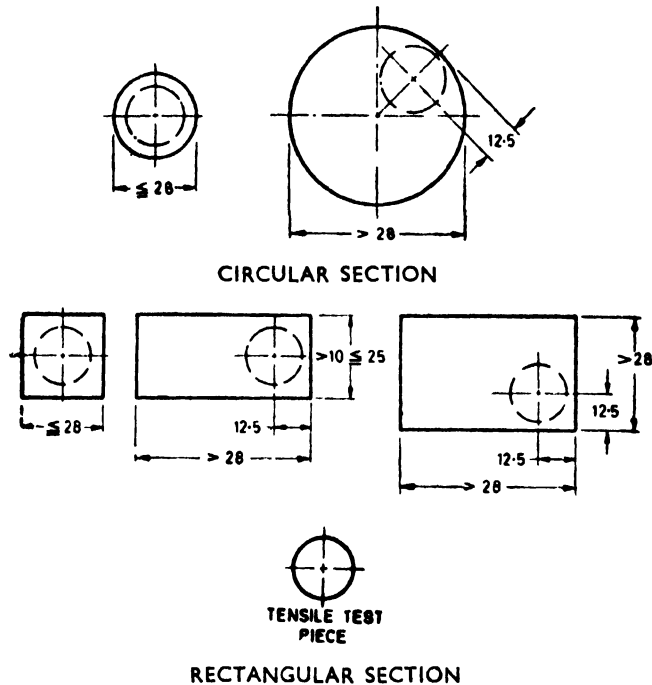


FIG. 4 LOCATION OF TENSILE TEST PIECES

8. PACKING

8.1 Packing and despatch of CTC segments shall be subject to the agreement between the manufacturer and the actual user.

9. MARKING

9.1 Each CTC segment shall be clearly marked with manufacturer's name and trade-mark.

9.1.1 The CTC segment may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	CONVERSION
Force	newton	N	$1 \text{ N} = 0.101\,972 \text{ kg f}$
Energy	joule	J	$1 \text{ J} = 1 \text{ N.m}$
Power	watt	W	$1 \text{ W} = 1 \text{ J/s}$
Flux	weber	Wb	$1 \text{ Wb} = 1 \text{ V.s}$
Flux density	tesla	T	$1 \text{ T} = 1 \text{ Wb/m}^2$
Frequency	hertz	Hz	$1 \text{ Hz} = 1 \text{ c/s (s}^{-1}\text{)}$
Electric conductance	siemens	S	$1 \text{ S} = 1 \text{ A/V}$
Pressure, stress	pascal	Pa	$1 \text{ Pa} = \text{N/m}^2$

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